REMARKS

The following remarks are made in response to the Final Office Action mailed July 2, 2004. Claims 1-31 were rejected. Claims 1-31 remain pending in the application and are presented for reconsideration and allowance.

Claim Rejections under 35 U.S.C. § 103

Claims 1-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,405,251 by Bullard et al. ("Bullard") in view of U.S. Patent No. 5,970,490 by Morgenstern ("Morgenstern"). Applicant submits that the Bullard reference alone or in combination with the Morgenstern reference fails to disclose, teach, or suggest the invention of independent claims 1, 13, 17, 24, 26 and 30.

Independent claim 1 recites a method for recording network usage. The method comprises defining a network data collector including an encapsulator, an aggregator, and a data storage system. A set of network accounting data is received via the encapsulator. A network accounting data set is converted to a standard data format. The network accounting data set is processed via the aggregator, including defining a rule chain and applying the rule chain to the network accounting data set to construct an aggregation tree including creating an aggregated network accounting data set. The aggregated network accounting data set is stored in the data storage system.

Bullard discloses a system for enhancement of network accounting records. The system includes a data collector layer 18 that is a distributed layer of individual data collectors. The data collectors collect raw accounting information and convert data into normalized records referred to as network accounting records (NARs). Each of the data collectors forwards network accounting records to a flow aggregation process 60. (See column 3, lines 43-54). The flow aggregation process 60, including aggregation processor 13, is a central collection point for all network accounting records produced from various data collectors in the data collection layer 18. The flow aggregation processor 60 aggregates and/or enhances record data across the network devices to produce summary NARs' (column 4, lines 1-26), and (column 18, lines 39-49). The

data can be further enhanced and/or reduced (i.e., aggregated) to meet the specific needs of an application or output interface based on the aggregation policy of the flow data processor 60.

Morgenstern discloses an integration system for processing heterogeneous data from multiple sources. The integration system utilizes an interoperability assistant module 20 (figure 2) including specifications for transforming the heterogeneous data into a common intermediate representation of the heterogeneous data using the specifications and creating an information bridge with the interoperability assistant module through a process of program generation. (See col. 1, lines 10-17). The system provides high-level user interfaces and program level access across heterogeneous databases, allowing immigration of a variety of information resources including relational and object databases, CAD design tools, simulation packages, data analysis and visualization tools, and other software modules. (Col. 3, lines 7-13).

High level transformation rule specifications (HLTRS) are utilized by the system to transform data from a source data representation to a target data representation. (See col. 8, lines 5-8). The HLTRS are sent to a transformer generator 42, which generates code files that describe the transformation rules in a form usable by a dependency graph 200 (see figure 4), which controls the data flow from source to target. (Col. 8, lines 53-57). Dependency graph 200 is the basis for rule execution. Dependency graph 200 is composed of an input tree 210, a rule graph 220, and an output tree 230. (See fig. 4 and col. 20, lines 46-50). Input data instances are first inserted into the input tree. The data instances are then passed by the input tree to the rule graph, together with completion signals. The rule graph 220 will apply specified transformation rules on the data instances to generate intermediate instances and output instances. The final rules of the rule graph insert the output instances into the output tree 230, which assembles and eventually outputs them accordingly. (Col. 21, lines 19-23).

The examiner conceded that Bullard does not teach **processing the network accounting data set via the aggregator, including the steps of defining a rule chain and applying the rule chain to the network accounting data set to construct an aggregation tree including creating an aggregated network accounting data set.** (Office Action, pg. 3 and pg. 4; See

also pg. 2 Response to Arguments, paragraph 1). The examiner submits that this limitation is taught by Morgenstern.

Morgenstern does not disclose **defining a rule chain and applying the rule chain to the network accounting data to construct an aggregation tree including creating an aggregated network accounting data set** as claimed by Applicant. Morgenstern merely discloses a rule graph 220 and the input tree 210 and output tree 230. The rule graph 220 is a directed graph and consists of data nodes and rule nodes. Each rule node is connected to one or more input data nodes and no more than one output data node. (See col. 21, lines 41-44). Rule graph 220 is not a rule chain as claimed by Applicant. In Morgenstern, **input data instances are first inserted into the input tree. The data instances are then passed by the input tree to the rule graph, together with completion signals.** The rule graph 220 will apply specified transformation rules on the data instances to generate intermediate instances and output instances. The final rules of the rule graph insert the output instances into the output tree 230 which assembles and eventually outputs them accordingly. (See Morgenstern, Col. 21, lines 19-26). [Emphasis Added].

In contrast, Applicant **applies a rule chain to the network accounting data set to construct an aggregation tree including an aggregated network accounting data set.** In view of the above, one skilled in the art could not combine the teachings of Bullard in view of Morgenstern and arrive at the present invention of independent claim 1.

Further, Bullard and Morgenstern fail to teach or suggest such a combination. Again, Bullard fails to teach or suggest defining a rule chain and applying the rule chain to the network accounting data set to construct an aggregation tree.

Morgenstern is directed to a method for processing heterogeneous data and does not disclose or even relate to collecting network accounting data. Rather, Morgenstern is direct to heterogeneous databases for design, engineering and manufacturing applications (e.g., computer aided design).

In view of the above, Applicants respectfully submit that the above rejection of independent claim 1 under 35 U.S.C. 103(a) should be withdrawn.

Dependent claims 2-12 depend directly or indirectly upon independent claim 1. Accordingly, dependent claims 2-12 are also allowable over the art of record.

Bullard, either alone or in combination with Morgenstern, also does not teach or suggest the claim recitations in independent claim 13. Claim 13 recites a method for recording network usage including correlating of network usage information and network session information. The method includes defining a network data correlator collector including an encapsulator, an aggregator, and a data storage system. A set of network session data is received via the encapsulator. The network session data set is processed via the aggregator, including the steps of defining a first rule chain and applying the first rule chain to the network session data to construct an aggregation tree. A set of network usage data is received via the encapsulator. The network usage data set is processed via the aggregator, including the steps of defining a second rule chain and applying the second rule chain to the network usage data and the aggregation tree to construct a correlated aggregation tree. A correlated data set is determined from the correlated aggregation tree. The correlated data set is stored in the data storage system. Bullard and Morgenstern do not teach or suggest these claim recitations.

As discussed above, Bullard fails to disclose **processing a network session data set via the aggregator, including the steps of defining a first rule chain and applying the first rule chain to the network session data to construct an aggregation tree, and processing a network usage data set via the aggregator, including the steps of defining a second rule chain and applying the second rule chain to the network usage data and the aggregation tree to construct a correlated aggregation tree.**

Morgenstern also does not disclose **defining a first rule chain and applying the first rule chain to the network session data to construct an aggregation tree and defining a second rule chain and applying the second rule chain to the network usage data and the aggregation tree to construct a correlated aggregation tree** as claimed by Applicant. In view of the above, one skilled in the art could not combine the teachings of Bullard in view of Morgenstern and arrive at the present invention of independent claim 13. Accordingly,

Applicant respectfully submits that the above rejection of independent claim 13 under 35 U.S.C. 103(a) should be withdrawn.

Dependent claims 14-16 depend directly or indirectly upon independent claim 13. Accordingly, dependent claims 14-16 are also allowable over the art of record.

Bullard, either alone or in combination with Morgenstern, also does not teach or suggest the claim recitations in independent claim 17. Claim 17 recites a method for recording network usage. The method includes defining a first network data collector including a first encapsulator, a first aggregator, and a first data storage system. A first set of network data is received via the first encapsulator. The first network data set is processed via the first aggregator, including the steps of defining an aggregation rule chain in determining a first set of aggregated data by applying the aggregation rule chain to the first set of network data. The first aggregated network data set is stored in the first data storage system. Bullard and Morgenstern do not teach or suggest these claim recitations. Applicant respectfully submits that the above rejection of independent claim 17 under 35 U.S.C. 103(a) should be withdrawn.

Dependent claims 18-23 depend directly or indirectly upon independent claim 17. Accordingly, these dependent claims are allowable over the art of record.

Bullard, either alone or in combination with Morgenstern, also does not teach or suggest the claim recitations in independent claim 24. Claim 24 recites a network usage recording system having a network data collector. The network data collector includes an encapsulator for receiving a set of network accounting data and converting the network accounting data set to a standard data format. An aggregator processes the network accounting data set, the aggregator including a defined rule chain, wherein the aggregator applies the rule chain to the network accounting data set to construct an aggregation tree, and determines a set of aggregated network accounting data from the aggregation tree. A data storage system stores the aggregated network accounting data. Bullard and Morgenstern do not teach or suggest these claim recitations. Applicant respectfully submits that the above rejection of independent claim 24 under 35 U.S.C. 103(a) should be withdrawn.

Dependent claim 25 depends directly upon independent claim 24. Accordingly, this dependent claim is allowable over the art of record.

Bullard, either alone or in combination with Morgenstern, also does not teach or suggest the claim recitations in independent claim 26. Claim 26 recites a network usage recording system having a network data correlator collector. The network data correlator collector includes an encapsulator which receives a set of network session data. An aggregator for processing the network session data set, the aggregator including a defined first rule chain wherein the aggregator applies the first rule chain to the network session data set to construct an aggregation tree. The encapsulator receives a set of network usage data, and the aggregator processes the network usage data set, the aggregator including a defined second rule chain, wherein the aggregator applies the second rule chain to the network usage data set and the aggregation tree to construct a correlated aggregation tree, and determines a correlated data set from the correlated aggregation tree. A data storage system stores the correlated data set. Bullard and Morgenstern do not teach or suggest these claim recitations. Applicant respectfully submits that the above rejection of independent claim 26 under 35 U.S.C. 103(a) should be withdrawn.

Dependent claims 27-29 depend either directly or indirectly upon independent claim 26. Accordingly, these dependent claims are allowable over the art of record.

Bullard, either alone or in combination with Morgenstern, also does not teach or suggest the claim recitations in independent claim 30. Claim 30 recites defining a first network data collector including a first encapsulator, a first aggregator, and a first data storage system. A first set of network data is received via the first encapsulator. The first network data set is processed via the first aggregator, including defining an aggregation rule chain and determining a first set of aggregated data by applying the aggregation rule chain to the first set of network data. The first aggregated network data set is stored in the first data storage system.

Applying the aggregation rule chain to the first set of network data further comprises constructing an aggregation tree. The first aggregated network data set is determined from the aggregation tree, where constructing an aggregation tree includes defining the first network data set to include a first network data event and a second network data event. The aggregation rule

chain is applied to the first network data event to construct a hierarchy of group nodes within the aggregation tree. The aggregation rule chain is applied to the second network data event to locate similar group nodes according to a predefined set of match rules, if no matching group nodes exist, the hierarchy of group nodes is extended within the aggregation tree by creating additional group nodes.

Applying the aggregation rule chain to the first network data event further includes defining the aggregation rule chain to include a first match rule for matching source IP address. The first network data event is defined to include a first source IP address. The first match rule is applied to the first network data event, including determining whether the aggregation tree includes a first group node matching the first source IP address, and if a matching first group node does not exist, creating the first group node for the first source IP address.

Applying the aggregation rule chain to the first network data event includes defining the aggregation rule chain to include a second match rule for matching destination IP address. The first network data event is defined to include a first destination IP address. The second match rule is applied to the first network data event, including determining whether the aggregation tree includes a second group node matching the first destination IP address, and if a matching second group node does not exist, creating the second group node for the first destination IP address. Applying the aggregation rule chain to the first network data event further includes defining the aggregation rule set to include an aggregation rule. The first network data event is defined to include a port number and volume of information. The aggregation rule is applied to the first network data event, including copying the port number, source IP address, destination IP address and volume information to the second group node. Bullard and Morgenstern do not teach or suggest these claim recitations. Applicant respectfully submits that the above rejection of independent claim 30 under 35 U.S.C. 103(a) should be withdrawn.

Dependent claim 31 depends directly upon independent claim 30. Accordingly, this dependent claim is allowable over the art of record.

CONCLUSION

In view of the above, Applicant respectfully submits that pending claims 1-31 are in form for allowance and are not taught or suggested by the cited references. Therefore, reconsideration and withdrawal of the rejections and allowance of claims 1-31 is respectfully requested.

No fees are required under 37 C.F.R. 1.16(b)(c). However, if such fees are required, the Patent Office is hereby authorized to charge Deposit Account No. 50-0471.

The Examiner is invited to contact the Applicant's representative at the below-listed telephone numbers to facilitate prosecution of this application.

Response under 37 C.F.R. 1.116
Applicant: Alexander C. Ranous et al.
Serial No.: 09/560,032
Filed: April 27, 2000
Docket No.: 10002142-1
Title: INTERNET USAGE DATA RECORDING SYSTEM AND METHOD EMPLOYING A CONFIGURABLE RULE ENGINE FOR THE PROCESSING AND CORRELATION OF NETWORK DATA

Any inquiry regarding this Response should be directed to either Phil Lyren at Telephone No. (281) 514-8236, Facsimile No. (281) 514-8332 or Steven E. Dicke at Telephone No. (612) 573-2005, Facsimile No. (612) 573-2005. In addition, all correspondence should continue to be directed to the following address:

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Respectfully submitted,

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CERTIFICATE UNDER 37 C.F.R. 1.8: The undersigned hereby certifies that this paper or papers, as described herein, are being facsimile transmitted to the United States Patent and Trademark Office, Fax No. (703) 872-9306 on this 25 day of August, 2004.

By Steven E. Dicke
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